

CLAIMS

1. Apparatus for supplying breathable gas to a patient, including a gas flow generator, a gas delivery circuit, a controller having data storage means, sensors
5 monitoring values of operational parameters of the apparatus, and fault detection means including at least one relationship stored in said data storage means, said relationship relating a combination of values of at least two of said parameters as indicative of a fault condition of said apparatus, said fault detection means further including means testing said at least two said monitored operational parameter values
10 against said stored relationships and instigating a response upon detection of a fault condition.
2. Apparatus according to claim 1 wherein said monitored parameters include at least motor speed of the flow generator, gas flow rate and gas delivery circuit
15 pneumatic pressure.
3. Apparatus according to claim 1 wherein the gas delivery circuit includes a gas inlet, a gas filter, the flow generator, a patient mask and a gas delivery conduit connecting the flow generator output to the mask.
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4. Apparatus according to claim 3 wherein the gas delivery circuit is adapted for optional addition of a humidifier.
5. Apparatus according to claim 1 wherein the apparatus is adapted to provide
25 CPAP or NIPPV treatment to the patient.
6. Apparatus according to claim 2 wherein said stored relationship relates a combination of values of gas delivery circuit pneumatic pressure, gas flow rate and motor speed as indicative of a pneumatic impedance fault condition of said gas
30 delivery circuit.

7. Apparatus according to claim 6 wherein said stored relationship includes calibration data relating pneumatic impedance against said pressure and gas flow rate at a range of motor speeds.
- 5 8. Apparatus according to claim 7 wherein said comparing means tests the combination of monitored pressure and monitored gas flow against calibration data applicable to the monitored motor speed.
9. Apparatus according to claim 2 wherein said stored relationship relates a
10 combination of values of at least two of said parameters as indicative of a fault condition of at least one of said sensors.
10. Apparatus according to claim 9 wherein said stored relationship relates a
15 combination of said pressure and gas flow rate as indicative of a pressure transducer fault condition.
11. Apparatus according to claim 9 wherein said stored relationship relates a
20 combination of said gas flow rate and motor speed as indicative of a flow transducer fault condition.
12. Apparatus according to claim 9 wherein said stored relationship relates a
combination of said motor speed and output of a snore index transducer as indicative
of a snore index transducer fault condition.
- 25 13. Apparatus according to claim 9 wherein said stored relationship relates a
combination of said motor speed, pressure, gas flow rate and a monitored motor drive
parameter as indicative of a motor speed transducer fault condition.
- 14.. Apparatus according to claim 13 wherein said monitored motor drive
30 parameter is a function of motor current.

15. Apparatus according to claim 2 wherein said stored relationship relates a combination of said motor speed and a monitored motor drive parameter as indicative of a motor operation fault condition.

5 16. Apparatus according to claim 15 wherein said monitored motor drive parameter is a function of motor current.

17. Apparatus according to claim 1 wherein said fault detection means detects a fault diagnosis process fault condition upon simultaneous assertion of two or more
10 mutually exclusive fault conditions.

18. Apparatus according to claim 17 wherein said fault detection means detects a breath and apnea detection process fault condition upon simultaneous assertion of both breath and apnea.

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19. Apparatus according to claim 18 wherein said fault detection means further detects a breath and apnea detection process fault condition where neither breath nor apnea is asserted for a predetermined period.